**Scheme – G**

# Sample Test Paper - I

**Course Name : Diploma in Mechanical Engineering.**

**Course Code : ME**

**17609**

**Semester : Sixth**

**Subject Title : Production Engineering and Robotics**

**Marks : 25** **Time:1 Hour**

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**Instructions:**

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

**Q.1) Attempt any THREE.** **(3 x 3=09)**

a) List any six techniques for improving productivity.

b) State advantages and disadvantages of mass production system (Three each.)

c) Write down six symptoms of Bad plant layout.

d) What are the objectives of government policies in relation to plant location?

e) What is the effect of i) Skilled manpower ii) Accuracy iii) delivery date of product on process planning.



**Q.2) Attempt any TWO.** **(2 x 4 =08)**

a) Draw a typical form of operation sheet and state which information we get from it.

b) Prepare two handed process chart for the process of 'assembly of screw and nut'.

c) How productivity is measured on the basis of i) labor ii) material iii) machine iv) capital.

**Q.3) Attempt ANY TWO.** **(2 x 4 =08)**

a) Write down any four design principles of Plant layout.

b) Describe working of Industrial truck with neat sketch.

c) Define inspection. Which factors are to considered to determine stages of inspection.

**Scheme – G**

# Sample Test Paper - II

**Course Name : Diploma in Mechanical Engineering.**

**Course Code : ME**

**17609**

**Semester : Sixth**

**Subject Title : Production Engineering and Robotics**

**Marks : 25** **Time:1 Hour**

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**Instructions:**

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

**Q.1) Attempt any THREE. (3 x 3=09)**

a) Define i) Routing ii) Dispatching iii) Scheduling.

b) State four objectives of work measurement.

c) Draw a well labeled sketch of cylindrical locator.

d) Write any three benefit of JIT

e) State any three application of Robot.



**Q.2) Attempt ANY TWO. (2 x 4 =08)**

a) Describe the term progress control with its steps.

b) Draw a flow chart for method study procedure.

c) State any four principles of jigs and fixtures design.

**Q. 3) Attempt ANY TWO. (2 x 4 =08)**

a) What is lean manufacturing? State its any six characteristics.

b) State the types of actuators used in robot and draw a neat sketch of one type of actuator.

c) What is the function of sensors in robots? Enlist types of sensors.

**Scheme – G**

# Sample Question Paper

**Course Name : Diploma in Mechanical Engineering.**

**Course Code : ME**

**17609**

**Semester : Sixth**

**Subject Title : Production Engineering and Robotics**

**Marks : 100** **Time: 3 Hours**

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**Instructions:**

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

**Q.1) A) Attempt any THREE.** **12 Marks**

a) State types of production system. Enlist four features of job production system.

b) How productivity is different from production with respect to following points-

i) Concept ii) use of resources.

c) What is the basis for measuring productivity?

d) State any four functions of production planning and control.



**Q.1) B) Attempt any ONE.** **06 Marks**

a) State types of plant lay outs. Describe any one with neat sketch.

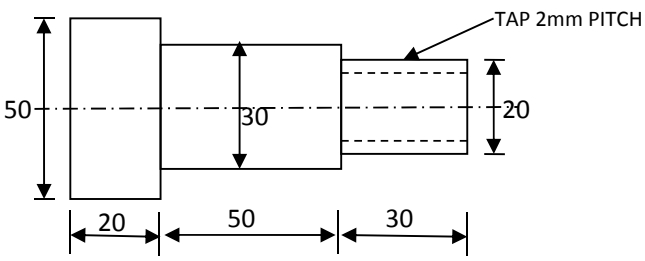
b) Describe Gantt chart for scheduling and actual progress of center lathe, milling machine, drilling machine and inspection.

**Q.2) Attempt any TWO.** **16 Marks**

a) Compare Wire Guided and Magnetic AGV systems on the basis of

i) Range ii) Accuracy iii) Flexibility iv) Reliability.

b) Prepare operation process sheet and sequence of operation for the component shown in figure. Assume suitable cutting parameters.



c) Write stepwise procedure of process planning from raw material to finished product.

**Q.3) Attempt any <u>FOUR</u>.** **16 Marks**

a) Write one application each of any four types of material handling equipments.

b) State any four factors affecting process planning.

c) Distinguish between floor inspection and centralized inspection (Any four points).

d) State any four factors affecting site selection for manufacturing Industry.

e) Define method study. Write down its any four objectives.

f) Differentiate between jigs and fixtures (any four points)

**Q.4) A) Attempt any <u>THREE</u>.** **12 Marks**

a) Describe push system of JIT with neat sketch.

b) Which technique is used for continuous improvement? What is the concept behind it?

c) Give the classification of sensors used in robots.

d) What is waste reduction? Enlist four techniques of waste reduction.

**Q.4) B) Attempt any <u>ONE</u>.** **06 Marks**

a) A worker takes 10 minutes as a standard time for a job in which total allowance is 15% of normal time. If the rating of working is 105%, find the actual time required by the worker.

b) Describe 3-2-1 principle of location used in jigs and fixture with suitable sketch.



**Q.5) Attempt any <u>FOUR</u>.** **16 Marks**

a) State any two functions each of following components of jigs and fixtures

i) Locating elements ii) Clamping elements.

b) Draw a proportionate sketch of channel type jig.

c) State the meaning of each ‘S’ in ‘5S’.

d) Describe cylindrical body and arm assembly robot with neat sketch.

e) State four types grippers used in robots with application of each.

f) Differentiate between hydraulic actuator and pneumatic actuator (Any four points).

**Q.6) Attempt any <u>TWO</u>.** **16 Marks**

a) What is the concept of line balancing? Write down its procedure. (4U8)

b) Draw the symbols and write color code of following therbligs -

i) search ii) plan iii) hold iv) disassemble.

c) Describe any two joint types used in robotic arm and wrist.